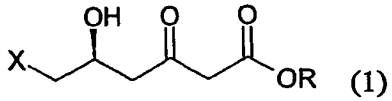
CLAIMS

1. A process for preparing a compound of formula (1)



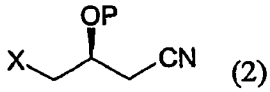
(1)

or its tautomer, in which

R represents hydrogen, saturated-C_1-C_4-alkyl, or unsaturated-C_2-C_4-alkyl, and

X represents halogen, which comprises the following steps:

1) (*S*)-4-halo-3-hydroxybutyronitrile derivative of the following formula (2)



(2)

in which

X is as defined above, and

P represents hydrogen or a hydroxy-protecting group, is reacted with an α-haloacetate compound of the following formula (3)

$$YCH_2CO_2R \quad (3)$$

in which

R is as defined above, and

Y represents Br or I, in the presence of zinc metal activated by an organic acid or its derivative in an organic solvent and

2) the product of step 1) is hydrolyzed in the presence of aqueous acid solution.

2. The process of claim 1 wherein P of the (*S*)-4-halo-3-hydroxybutyronitrile derivative of formula (2) represents hydrogen, or represents $SiRR^1R^2$ wherein R is as defined in claim 1, and R^1 and R^2 each represent hydrogen, saturated-C_1-C_6-alkyl, unsaturated-C_2-C_6-alkyl, or C_6-C_{12}-aromatic group, or represents ethoxyethyl or tetrahydropyranyl.

3. The process of claim 2 wherein P represents trimethylsilyl, triethylsilyl, *t*-butyldimethylsilyl, or *t*-butyldiphenylsilyl.

4. The process of claim 3 wherein P represents trimethylsilyl.

5. The process of claim 1 wherein the organic solvent is one or more selected from a group consisting of tetrahydrofuran, benzene, toluene, and ether.

6. The process of claim 5 wherein the organic solvent is tetrahydrofuran.

7. The process of claim 1 wherein R of the α-haloacetate compound of formula (3) represents saturated-C_1-C_4-alkyl.

8. The process of claim 7 wherein R represents *t*-butyl.

9. The process of claim 1 or 7 wherein the α-haloacetate compound of formula (3) is used in an amount of 1.0 to 3.0 equiv with respect to the compound of formula (2).

10. The process of claim 1 wherein the zinc metal is used in an amount of 1.0 to 3.0 equiv with respect to the compound of formula (2).

11. The process of claim 10 wherein the zinc metal is zinc dust or zinc powder.

12. The process of claim 1 wherein the organic acid or its derivative is selected from a group consisting of R^3CO_2H, R^3SO_3H, R^3CO_2TMS, R^3SO_3TMS, and $(R^3SO_2)_2NH$ wherein R^3 represents hydrogen, saturated-C_1-C_6-alkyl, unsaturated-C_2-C_6-alkyl,

saturated-C_1-C_6-alkyl substituted by halogen, unsaturated-C_2-C_6-alkyl substituted by halogen, C_6-C_{12}-aromatic, or C_6-C_{12}-aromatic substituted by halogen.

13. The process of claim 12 wherein the organic acid or its derivative is used in an amount of 0.001 to 0.1 equiv with respect to the compound of formula (2).

14. The process of claim 1 wherein the aqueous acid solution is aqueous hydrochloric or sulfuric acid solution.

15. The process of claim 1 wherein the aqueous acid solution is added in an amount to adjust the pH to 3 ~ 4.

16. The process of claim 15 wherein the aqueous acid solution is added dropwise at a temperature ranging from 0 to 5 °C.